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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/504,813

02/16/2000

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09792909-4468

6161

26263 7590 05/09/2007  
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EXAMINER

CREPEAU, JONATHAN

ART UNIT

PAPER NUMBER

1745

MAIL DATE

DELIVERY MODE

05/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/504,813	<b>Applicant(s)</b> GOTO ET AL.	
	<b>Examiner</b> Jonathan S. Crepeau	<b>Art Unit</b> 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 7,10-15 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7,10-15 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/23/07</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office action addresses claims 7, 10-15, and 17. The claims remain rejected for the reasons of record. Accordingly, this action is made final.

### ***Information Disclosure Statement***

2. The Japanese Office action cited in the IDS of 3/23/07 has not been considered because it is not in the English language.

### ***Claim Rejections - 35 USC § 103***

3. Claims 7, 10-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Narang et al (U.S. Patent 6,168,885) in view of Schneider et al (U.S. Patent 6,180,281) in view of Gozdz et al (U.S. Patent 5,840,087) in view of Kumeuchi et al (U.S. Patent 6,156,080).

Regarding claims 7 and 17, In Figure 1 and in column 11, lines 4-12, Narang et al. generally teach a process for making a battery comprising the steps of coating a negative electrode with electrolyte (26), coating a positive electrode with electrolyte (36), and laminating the two electrode/electrolyte sheets together under heat (42) so as to form a single, continuous electrolyte. The electrolyte layers contain a matrix polymer, plasticizer (solvent), and a lithium salt, and are gelled (see column 11, lines 7 and 8). The plasticizer may comprise ethylene carbonate (EC) and dimethylcarbonate (DMC) (see column 10, lines 34-55), the salt may

comprise  $\text{LiPF}_6$ ,  $\text{LiBF}_4$ , and  $\text{LiAsF}_6$ , among others (see col. 10, line 23), and the matrix polymer is preferably polyvinylidene difluoride (PVDF) (see col. 10, line 34).

Narang et al. do not expressly teach that the electrode/electrolyte sheets are wound prior to heat-treatment, or that the electrolyte layers are formed into a “seamless” layer, as recited in claims 7 and 17. The reference further does not expressly teach that both sides of each electrode are coated with electrolyte (claims 7 and 17), or the duration of the lamination (claim 10).

The patent of Schneider et al. is generally directed to composite separator and electrode structures comprising seamless interfaces between the separator and electrodes (see abstract).

It is submitted that the artisan would be motivated by the disclosure of Schneider et al. to form the electrolyte layers of Narang et al. into a “seamless” layer. In column 6, line 30 et seq., Schneider et al. teach that “the interfaces between the advancing polymer boundaries having merged to lose completely any independent identity. The resulting structure is very pliant, translucent, and smooth, but extraordinarily strong, as shown in the Examples.” The reference further teaches in column 2, line 65 et seq. that “the resultant composite allows ions to freely migrate from the electrode domain through the separator domain during successive charging and discharging of the battery.” Accordingly, these teachings of Schneider et al. would motivate the artisan to form a “seamless” interface between the electrolyte layers of Narang et al. In addition, the patent of Gozdz et al. is taken as further evidence of electrolyte layers being laminated together to form a continuous seamless layer (see col. 6, line 43 of Gozdz).

The patent of Kumeuchi et al. is directed to methods of making electrode assemblies. In claim 47, the reference teaches a process comprising the steps of winding an electrode assembly,

inserting the assembly into a bag (film pack), sealing the bag, and simultaneously heating and compressing the wound electrode assembly.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the process of Kumeuchi et al. to manufacture the battery of Narang et al., thereby resulting in the process of claims 7 and 17. In the abstract, Kumeuchi et al. teach the following:

trode sheet deposition. In accordance with the above-mentioned method, it is possible to increase a cell capacity per a unit volume in a prismatic cell, because the electrode sheet can be wound further half turn or a plurality of times. In addition, it is also possible to increase an efficiency in a charging and discharging cycle, because a gap between the electrodes and the insulating sheet is made smaller, and a space in a center of the wound electrode sheet deposition is also made smaller, ensuring uniform reaction in the electrode.

Accordingly, the artisan would be motivated by this disclosure to wind and heat the electrode assembly of Narang et al. according the process of Kumeuchi, thereby rendering the claimed process steps obvious. It is further noted that Kumeuchi et al. teach a heating time of 30 minutes or less in claim 34 of the reference. Such disclosure renders obvious the claimed time of 10 minutes.

Regarding the limitation in claims 7 and 17 that both sides of both electrodes are coated with electrolyte, the artisan would be sufficiently motivated to perform this step with the electrodes of Narang et al. Narang et al. teach at column 11, line 9 that "as many layers as necessary can be laminated together to provide the desired capacity of the final electrochemical cell." This disclosure clearly indicates that both sides of each electrode may be coated (to result

in, for example, a stacked cell configuration). Furthermore, as noted above, the artisan would be sufficiently motivated to use a spirally-wound configuration with the electrodes of Narang et al. In order to achieve such a configuration, the artisan would understand that an electrically insulating material would have to present on both sides of each electrode in order to prevent a short circuit. In view of Narang's teaching of multi-layer cells above, the coating of electrically insulating, ion-conductive electrolyte material on both sides of each electrode would be an obvious way of eliminating such a short circuit. Accordingly, this limitation would also be rendered obvious to the skilled artisan.

#### *Response to Arguments*

4. Applicant's arguments filed February 23, 2007 have been fully considered but they are not persuasive. Applicants assert that Narang is directed to a fire retardant technique, and "thus why one skilled in the art would be motivated to read the disclosure in Narang and select the specific passages that Office is citing is lacking." In response, it is submitted that Narang is prior art for all it teaches, and there does not have to a showing of a "motivation" to select specific passages in the reference, particularly since the reference is used a primary reference in the above 103 rejection.

Regarding Schneider, Applicants state that "although generally discussed as the boundaries having 'merged' the Office has not shown that these boundaries are 'seamless.'" In response, it is submitted that merging boundaries is considered to read on "seamless."

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Applicants have provided no definition of “seamless” in the specification or prosecution history of the instant application. Accordingly, the disclosure of Schnieder is still considered to render obvious the “seamless” limitation. It is further noted that Gozdz expressly states that his electrolyte layers form a “homogeneous, cohesive bond,” thus also evidencing the obviousness of a “seamless” electrolyte layer. In addition, regarding Gozdz, Applicants state that this patent teaches a “completely different process,” i.e., a rolling process. However, it is maintained that the Gozdz reference is highly analogous to both Narang and to the claimed invention since it deals with laminating battery components and forming a “seamless” electrolyte layer.

Regarding Kumeuchi, Applicants state that no motivation has been provided to use the teachings of this reference. However, as noted above, Kumeuchi expressly states that cell capacity per unit volume may be increased and that charge and discharge efficiency may be increased. Thus, motivation for combining the teachings of Kumeuchi with Narang exists. Further regarding Kumeuchi, Applicants state that “the ‘30 minutes or less’ limitation within Kumeuchi is indefinite.” This is not persuasive, as this disclosure clearly specifies the upper end of the time limit, and may be reasonably interpreted as encompassing any nonzero value under 30 minutes, including 10 minutes as claimed.

Finally, Applicants assert that “the Office provides no basis for rejection of each and every dependent claim herein,” and a presumption of allowability is created with regard to those claims. In response, it is believed that the subject matter of each and every dependent claim has been addressed in the above rejection, and Applicants are referred to the rejection for further explanation. When setting forth a rejection, the Office is not required to enumerate each and

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every claim number in the body of that rejection; i.e., a statement at the beginning of the rejection that "claims xxx are rejected" is sufficient to comply with the rules. Accordingly, Applicant's arguments on these grounds are also not persuasive.

### ***Conclusion***

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the



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organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau  
Primary Examiner  
Art Unit 1745  
May 4, 2007